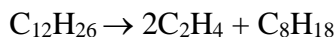


ANSWERS: Cracking

1. Catalyst, heat, pressure.



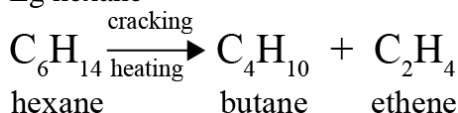
Large organic molecules are **inefficient fuels** because they do **not flow easily** and are **hard to ignite** (not volatile enough – ie not easily made gaseous). They need to be cracked into **smaller molecules** that do **burn more efficiently**. Cracking also produces **small alkenes**, which are useful in making many other carbon compounds, including **polymers**.

3. Cracking is a thermal decomposition reaction using heat and / or a catalyst to vaporise a larger alkane and break its bonds to produce a smaller alkane and an alkene.

Long chained hydrocarbons don't flow as well, and are difficult to ignite (because bigger molecules don't vaporise as easily), so they are less efficient fuels than shorter chained hydrocarbons.

An alkane and an alkene are produced. Since the number of carbon and hydrogen atoms does not change, two alkanes cannot be made (as there would be 2 H atoms short).

Eg hexane



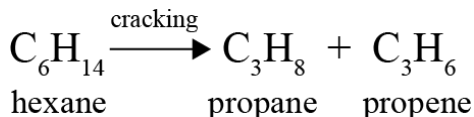
EITHER

Uses:

Butane is used as a fuel in lighters, propellant in aerosol cans and is (mixed with propane and) used to make LPG.

Ethene is used to make ethanol and in polymerisation reactions to make polyethene.

OR



Uses:

Propane is (mixed with butane and) used to make LPG.

Propene is used in polymerisation reactions to make polypropene.